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## (54) PLASMA PRODUCING DEVICE AND SEMICONDUCTOR MANUFACTURING METHOD

(57)Abstract:

**PROBLEM TO BE SOLVED:** To generate a high-density plasma even in the central part of a plasma generating region in a plasma generating device having rectangular electrodes.

**SOLUTION:** A vacuum chamber 11 has a rectangular flat section. An electrode 14 for discharge has a rectangular cylinder shape, constitutes one part of the rectangular vacuum container 11 and is provided in such a way as to encircle a plasma generating region 41. Rectangular permanent magnets 15 and 16 provided in such a way as to encircle the electrode 14 form prescribed lines 43 of magnetic force. These lines 43 each have a part almost parallel to the central axis 42 of the electrode 14 and the nearer the length of these parallel parts approaches the central axis 42, the longer the length becomes. One pair of parallel-plate electrodes 17 and 18 are formed into a rectangular form and regulate the range of the region 41 in the direction of the central axis 42 of the electrode 14. The one pair of these electrodes 17 and 18 are provided in such a way as to hold the region 41 between them from the direction of the above central axis 42. Moreover, a plasma generating device is constituted so as to have such a form that the lines 43 to pass through the central part of the region 41 do not intersect the pair of the electrodes 17 and 18.

